Section C:1

Nuclear Material Stabilization

PROJECT MANAGERS

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DOE/RL-2000-76, Rev. 1

SUMMARY

The Nuclear Material Stabilization (NMS) mission consists of the Plutonium Finishing Plant (PFP), WBS 1.4.5 (PBS TP05).

NOTE: Unless otherwise noted, the Safety, Conduct of Operations, Milestone Achievement, and Cost/Schedule data contained herein is as of November 30, 2000. All other information is as of December 31, 2000, unless otherwise stated.

Fiscal-year-to-date milestone performance (EA, DOE-HQ, and RL) shows that one of nine milestones (11 percent) was completed on or ahead of schedule, none were completed late, and one is forecast to be late (11 percent). Although eight additional milestones are scheduled for completion later this fiscal year, no milestones were scheduled for completion during this report period. Further details can be found in the milestone exception report following the cost and schedule variance analysis.

ACCOMPLISHMENTS

Maintain Safe and Compliant PFP

- Through December 31, 2000, there were 396 calendar days (nearly 1.3 million staff hours) since the last recorded lost workday injury that occurred on December 2, 1999.
- Completed installation of the first of six (6) automatic external defibrillators at the Plutonium Finishing Plant (PFP) to assist victims of Sudden Cardiac Arrest.
- Installation and testing of backflow preventers within the PFP complex continues. To date, seven (7) backflow preventers have been installed, tested, and are operating. This activity remains one month ahead of schedule of the June 2001 RL milestone completion date.

Oxides/Metals/Polycubes Stabilization

- The ALARA analysis of polycube stabilization was completed in November and the cost/benefit analysis was issued December 26, 2000.

Maintain Safe & Secure SNM

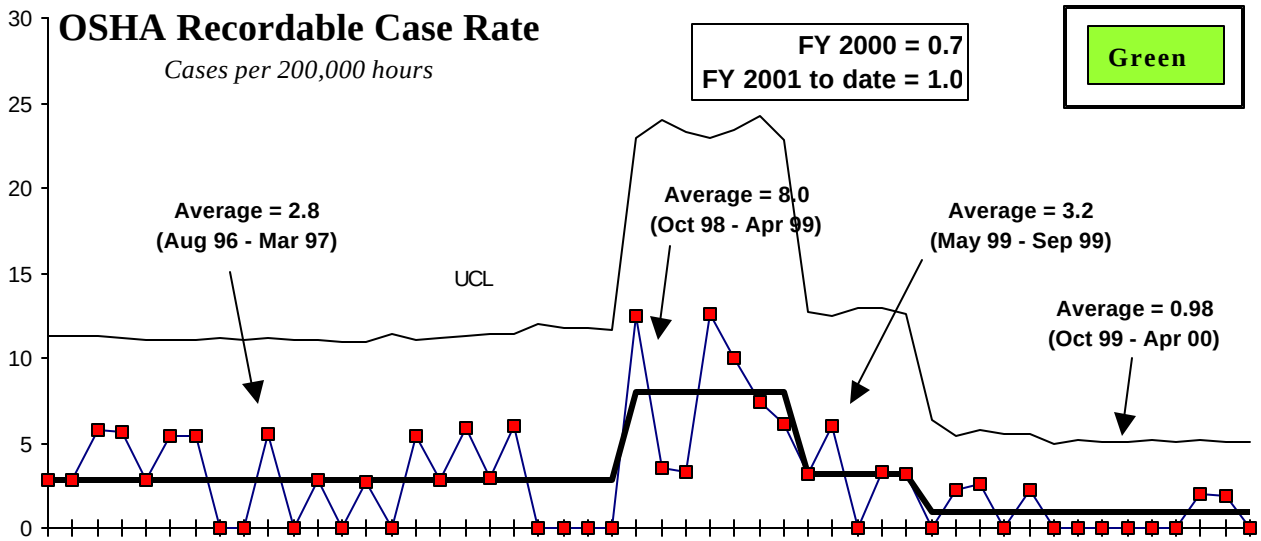
- The sixth consecutive year of International Atomic Energy Agency (IAEA) monthly ADHOC inspections was successfully completed without an observation or finding.
- Six University of Washington fuel plates were shipped off-site to Oak Ridge National Laboratory on November 16, 2000, contributing to the reduction of special nuclear materials inventory at PFP.

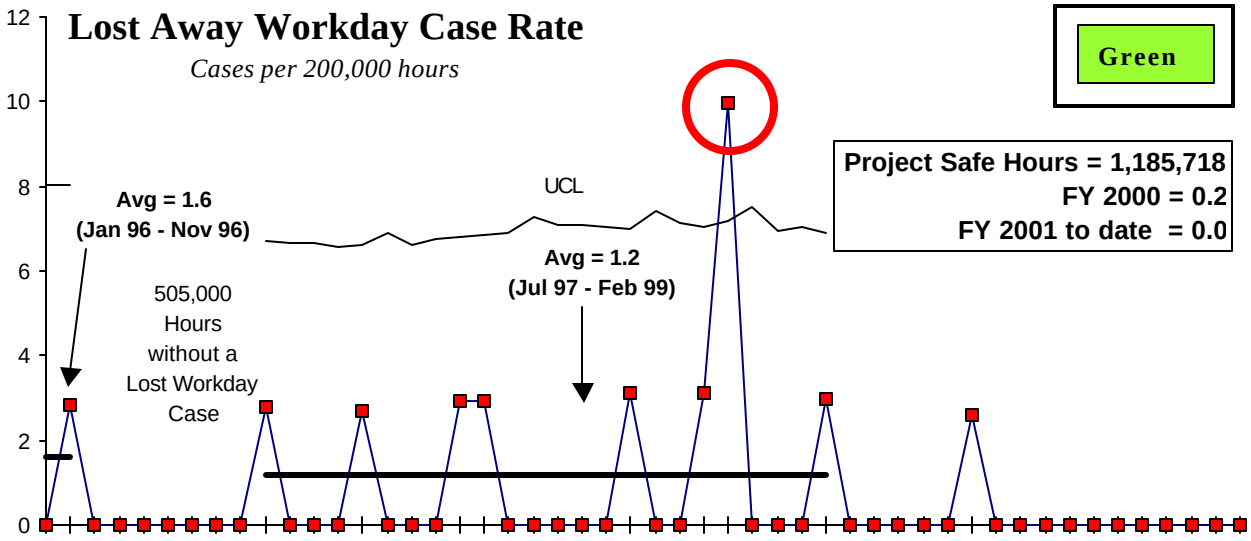
Solution Stabilization

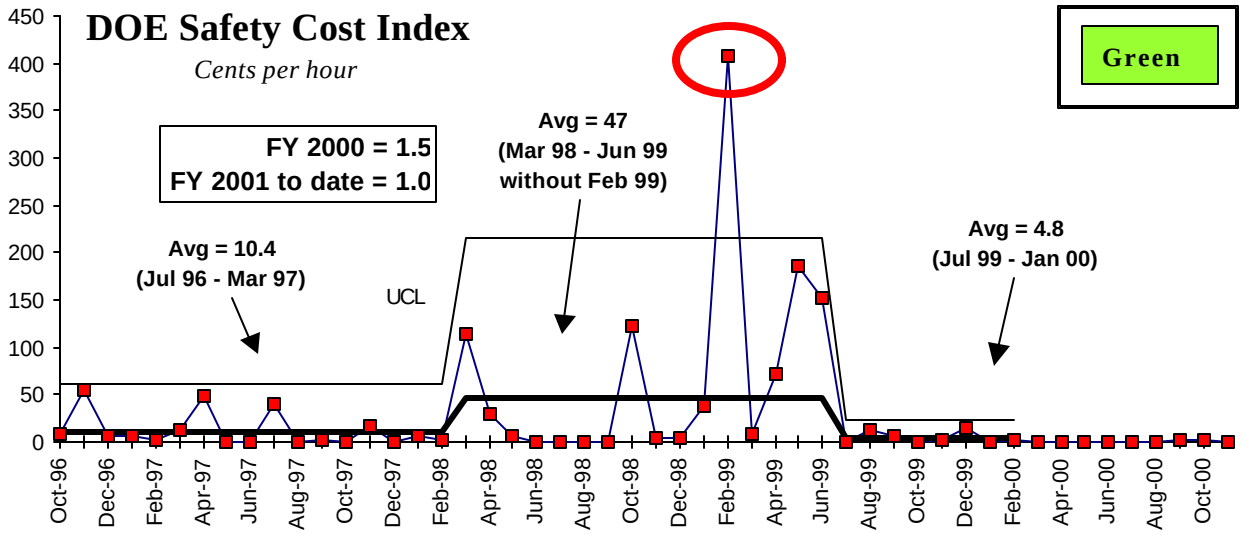
- Upgraded hardware was installed, and its operation initiated (two-boat hot plate system) in glovebox #3. A second two-boat hot plate system is scheduled to be installed in January 2001.

SAFETY

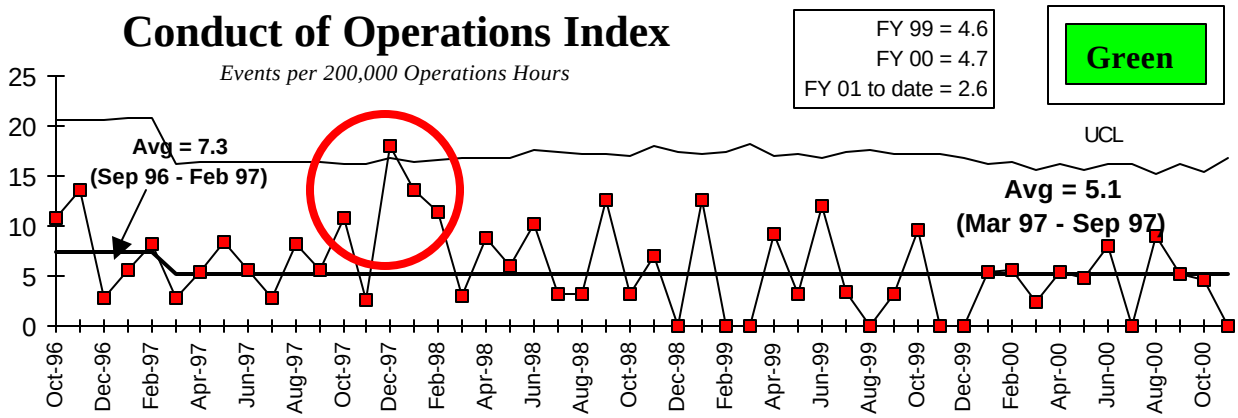
The Nuclear Material Stabilization Project (NMSP) is approaching 1.2 million safe work hours since the last new case with days away from work. The NMSP OSHA Recordable Case Rate is stable.

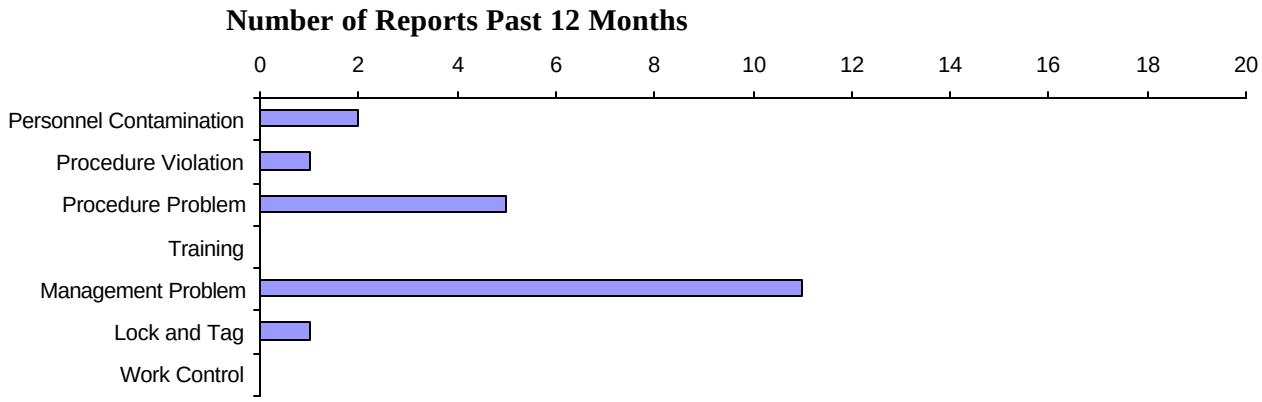

OSHA Recordable Case Rate
Cases per 200,000 hours
FY 2000 = 0.7
FY 2001 to date = 1.0
Green
Average = 2.8
(Aug 96 - Mar 97)
UCL
Average = 8.0
(Oct 98 - Apr 99)
Average = 3.2
(May 99 - Sep 99)
Average = 0.98
(Oct 99 - Apr 00)
30
25
20
15
10
5
0


Lost Away Workday Case Rate
Cases per 200,000 hours
Green
Project Safe Hours = 1,185,718
FY 2000 = 0.2
FY 2001 to date = 0.0
Avg = 1.6
(Jan 96 - Nov 96)
UCL
Avg = 1.2
(Jul 97 - Feb 99)
505,000
Hours
without a
Lost Workday
Case
12
10
8
6
4
2
0


DOE Safety Cost Index
Cents per hour
Green
FY 2000 = 1.5
FY 2001 to date = 1.0
Avg = 47
(Mar 98 - Jun 99
without Feb 99)
Avg = 10.4
(Jul 96 - Mar 97)
UCL
Avg = 4.8
(Jul 99 - Jan 00)
450
400
350
300
250
200
150
100
50
0
Oct-96
Dec-96
Feb-97
Apr-97
Jun-97
Aug-97
Oct-97
Dec-97
Feb-98
Apr-98
Jun-98
Aug-98
Oct-98
Dec-98
Feb-99
Apr-99
Jun-99
Aug-99
Oct-99
Dec-99
Feb-00
Apr-00
Jun-00
Aug-00
Oct-00

CONDUCT OF OPERATIONS / ISMS STATUS





ISMS STATUS

There were continued safety improvements at PFP through Integrated Environmental, Safety and Health Management System (ISMS).

- PFP was commended by RL for participation in the ISM National Conference held December 5-6, 2000.

BREAKTHROUGHS / OPPORTUNITIES FOR IMPROVEMENT

Breakthroughs

- Nothing to report at this time.

Opportunities for Improvement

Green

- **Exposure Reduction —** Funding was approved, and procurement is underway, to purchase the remote controlled video camera that will reduce employee exposure in the 2736-Z vaults by performing remote video inspections and inventories.

- **Process Efficiency —** Continuing to identify alloys that can be stabilized early using potentially available muffle furnace capacity. The priority for Furnaces 1, 2 and 3 is thermal stabilization of solutions precipitate. For Furnaces 4 and 5, the priority is for the thermal stabilization of metals if they ignite and oxidize. If that doesn't happen, and if there are no solutions precipitate furnace charges available, then alloys are the next candidate for furnace charges. Having these backup material options ensures maximum use of available furnace capacity.

- **Process Improvement —** A containment tent was fabricated and installed to support residue sealout operations from glovebox HC-46F in room 170 at 234-5Z. This allows immediate sealout and provides the opportunity for concurrent operations with an expected significant increase in throughput. (No further status to be provided.)

- **Loss On Ignition (LOI) Equipment Upgrade —** Calibration and testing of the Supercritical Fluids Extraction (SFE) equipment for moisture measurement in stabilized oxides was completed. Operation of this new equipment indicated that eight previously stabilized items that had exceeded LOI limits were actually well within acceptable limits for storage. (No further status to be provided.)

UPCOMING ACTIVITIES

- For Project W-460, Westinghouse Savannah River Company's delivery of the 2736-ZB Bagless Transfer System (BTS) and Outer Can Welder (OCW) is expected during the second quarter of FY 2001.

- Complete modifications to one vault cubicle by April 2, 2001. (Milestone TRP-99-412).

- Complete repackaging and shipping of Rocky Flats ash to the Central Waste Complex (CWC) by April 30, 2001. (Milestone TRP-01-515).

- Complete stabilization of plutonium (Pu) alloys by June 30, 2001 (Milestone TRP-01-501).

- Complete repackaging of Pu metal inventory in 3013 inner cans by March 31, 2001, and outer cans by August 1, 2001.

FY TO DATE COST PERFORMANCE ($M):

	BCWP	ACWP	VARIANCE
Nuclear Materials Stabilization	$13.8	$14.0	- $.1M*

*Rounding

The $0.1 million (1 percent) unfavorable cost variance was within threshold.

FY TO DATE SCHEDULE PERFORMANCE ($M):

	BCWP	BCWS	VARIANCE
Nuclear Materials Stabilization	$13.8	$17.2	- $3.3M*

* Rounding

The $3.3 million (19 percent) unfavorable schedule variance was due primarily to technical and staffing issues in the Residues Packaging and Solutions Stabilization projects. Other contributing factors included the time required for requalification of the Segmented Gamma Assay System (now completed), and delayed delivery of Pipe Overpack Containers (POCs) scheduled but not delivered. (See detailed variance narratives)

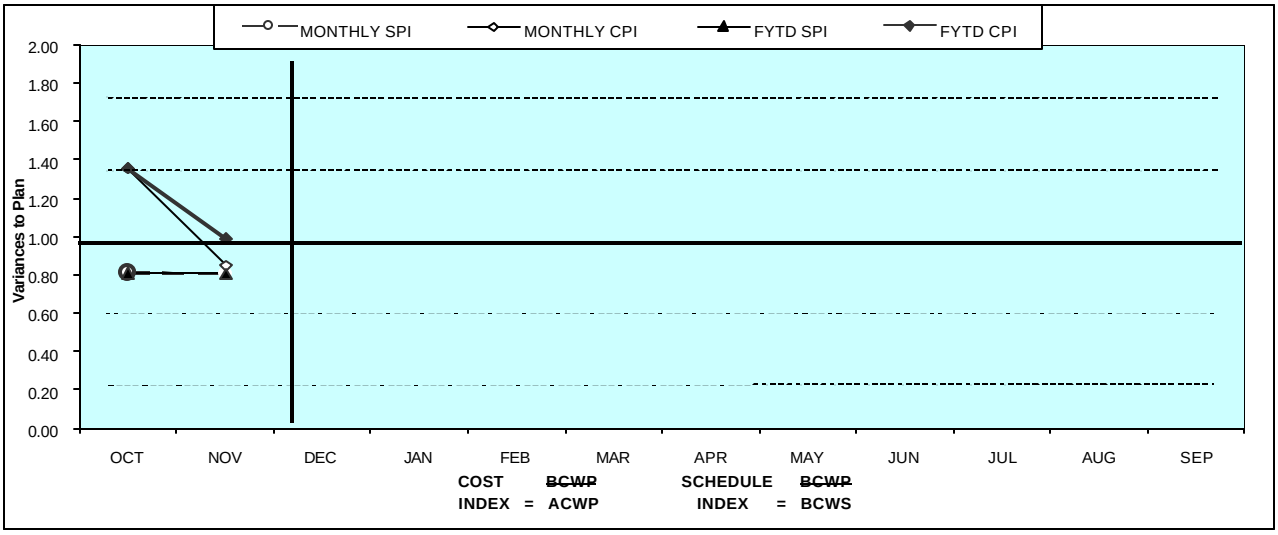
FY 2001 COST/SCHEDULE PERFORMANCE – ALL FUND TYPES
CUMULATIVE TO DATE STATUS – ($000)

Yellow

		FYTD							
By PBS		BCWS	BCWP	ACWP	SV	%	CV	%	PEM
WBS 1.4.5 PBS TP05	PFP Deactivation	$ 17,187	$ 13,844	$ 13,973	$ (3,342)	-19%	$ (129)	-1%	$ 106,494
	Total	$ 17,187	$ 13,844	$ 13,973	$ (3,342)	-19%	$ (129)	-1%	$ 106,494

Authorized baseline per the Integrated Planning Accountability, and Budget System (IPABS) – Project Execution Module (PEM). RL-Directed Costs (steam) are included in the PEM BCWS.

COST/SCHEDULE PERFORMANCE INDICES (MONTHLY AND FYTD)



FY 2001	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MONTHLY SPI	0.81	0.80										
MONTHLY CPI	1.36	0.85										
FYTD SPI	0.81	0.81										
FYTD CPI	1.36	0.99										
MONTHLY BCWS	$6,629	$10,558	$9,052	$9,252	$7,587	$8,544	$8,443	$10,285	$7,371	$7,177	$9,728	$11,870
MONTHLY BCWP	$5,355	$8,489										
MONTHLY ACWP	$3,945	$10,028										
FYTD BCWS	$6,629	$17,187	$26,239	$35,491	$43,078	$51,622	$60,064	$70,350	$77,720	$84,897	$94,625	$106,494
FYTD BCWP	$5,355	$13,844										
FYTD ACWP	$3,945	$13,973										

COST VARIANCE ANALYSIS: (-$0.1M)

WBS/PBS **Title**

1.4.5/TP05 **PFP Deactivation**
Description and Cause: Within threshold.
Impact: No impact projected.
Corrective Action: None required at this time.

SCHEDULE VARIANCE ANALYSIS: (-$3.3M)

WBS/PBS **Title**

1.4.5.1.11/TP05 **Maintain Safe & Compliant PFP (-$287K)**
Description and Cause: The unfavorable schedule variance was due to a shortage of staff that delayed the start of planned electrical, lighting, and Continuous Air Monitor (CAM) upgrades. **Impact:** No impact at the present time. Despite the delayed start, these projects are expected to be completed as scheduled.
Corrective Action: Efforts are underway to expedite the staff increase necessary to support the planned special project workscope.

1.4.5.1.13/TP05 Stabilization of Nuclear Material (-$1,578K)

Description and Cause: The unfavorable schedule variance was due primarily to technical and staffing issues in the Residues Packaging and Solutions Stabilization projects. Other contributing factors include the time required for requalification of the Segmented Gamma Assay System (now completed), and no delivery of Pipe Overpack Containers (POCs) as scheduled. Progress in the Solutions Stabilization project has been slowed by the decreased throughput now being experienced with the current feed stream. Specifically, more boats of precipitate are being generated per batch of solution than originally planned.

Impact: While Residues Packaging is significantly behind schedule for the original December 2000 target date, the April 30, 2001 Tri-Party Agreement Milestone (M-083-07) commitment will be met. The DNFSB milestone (TRP-01-500) to complete solutions stabilization by December 31, 2001, is forecast to be 3 months behind schedule.

Corrective Action: Staffing to support second shift Residues Packaging Project operations is on schedule to be in place in January 2001. Additional lag storage, revision to the Operational Safety Requirement allowing increased inventory, and installation of upgraded hardware (two boat hot plate systems) are expected to significantly increase the Solutions Stabilization Project's processing throughput.

1.4.5.1.14/TP05 Disposition of Nuclear Material (-$1,473K)

Description and Cause: The unfavorable schedule variance was primarily due to Project W-460 equipment and material procurements in support of 2736-ZB Bagless Transfer System construction that have not been delivered. Shipments of packaged Rocky Flats ash to the Central Waste Complex are also behind schedule.

Impact: No impact is currently forecast for Project W-460 or completion of residue packaging of Rocky Flats ash.

Corrective Action: Recovery of this schedule variance is expected as equipment and materials are delivered.

ISSUES

Technical Issues

Issue: The quantity of boats from the precipitation process is higher than expected or forecasted in the baseline estimates and schedules.

Impacts: Extends project completion date.

Corrective Action: Processing estimates and production schedules were revised based on results of the characterization-processing task. Recovery plans, which include installation of two-boat hot plates, additional lag storage, and increased glovebox inventory, have been developed and are being implemented. Baseline Change Request FSP-2001-014 is being processed to extend the solutions stabilization completion date to March 31, 2002.

Filtrate from the precipitation process is requiring recycling to meet the discharge limit for the drum loading station. Techniques for improving the processing are being worked jointly with members of the Plutonium Process Support Laboratories and Pacific Northwest National Laboratory staff.

Issue: The rate of throughput for polycube processing was determined to be less than planned during the latest Integrated Project Management Plan (IPMP) update.
Impacts: The processing method change will provide a recovery of the schedule delay. However, the completion of polycube stabilization may still be impacted up to two months because of the increased amount of precipitate to be stabilized, limiting furnace availability.
Corrective Action: A revised processing method was established and the required Safety Analysis (SA) was drafted.

Issue: Portions of the oxides to be processed contain fairly high levels of chloride.
Impacts: Completion of oxide stabilization could be delayed.
Corrective Action: A meeting has been held with PNNL to select the characterization and material pretreatment methods to remove chlorides prior to processing. The need date for this technology is October 2001.

DOE/Regulator/External Issues

Nothing to report at this time.

BASELINE CHANGE REQUESTS CURRENTLY IN PROCESS ($000)

PROJECT CHANGE NUMBER	DATE ORIGIN.	BASELINE CHANGE REQUEST TITLE	COST IMPACT $000	S C H	T E C H	DATE TO CCB	CCB APR'VD	RL APR'VD	CURRENT STATUS
FH-2001-001	12-Sep-00	Base Operations Reduction	<$6,790>	X	X	25-Oct-00	25-Oct-00		At RL
FH-2001-002	12-Sep-00	FY01 Fee Reduction to 90%	<$600>	X	X	25-Oct-00	25-Oct-00		At RL
FH-2000-003	12-Sep-00	Addition of High Priority Workscope	$9,707	X	X	25-Oct-00	25-Oct-00		At RL
FSP-2000-079	12-Sep-00	FY 2001 MYWP & Baseline Revisions	$0	X	X	29-Aug-00	31-Aug-00	27-Dec-00	Approved
FSP-2001-009	12-Sep-00	Remote Material Surveillance	$548	X	X	11-Dec-00	19-Dec-00	N/A	Approved
FSP-2001-013	28-Nov-00	Tank 241-Z-361 Cont'd Operations	$150	X	X	30-Nov-00	6-Dec-00	N/A	Approved
FSP-2001-014	29-Nov-00	Extend Solutions Campaign	<$407>	X	X	11-Dec-00	19-Dec-00		At RL
ADVANCED WORK AUTHORIZATION									
AWA-01-002		PFP Parking Lot Upgrade	$150	X	X				On hold
AWA-01-003		Mg(Oh)2 Filtrate Disposal	$75	X	X	9-Nov-00	13-Nov-00	N/A	Complete
AWA-01-004		Mg(Oh)2 FSAR Addendum	$70	X	X	9-Nov-00	13-Nov-00	N/A	Complete

MILESTONE ACHIEVEMENT

Green

MILESTONE TYPE	FISCAL YEAR-TO-DATE				REMAINING SCHEDULED			TOTAL FY 2001
	Completed Early	Completed On Schedule	Completed Late	Overdue	Forecast Early	Forecast On Schedule	Forecast Late	
Enforceable Agreement	0	0	0	0	0	2	0	2
DOE-HQ	0	0	0	0	0	1	1	2
RL	1	0	0	0	0	4	0	5
Total Project	1	0	0	0	0	7	1	9

Only TPA/EA milestones and all FY2001 overdue and forecast late milestones are addressed in this report. Milestones overdue are deleted from the Milestone Exception Report once they are completed. The following chart summarizes the FY2001 TPA/EA milestone achievement and a Milestone Exception Report follows. The last milestone table summarizes the first six months of FY 2002 TPA/EA milestones.

FY 2001 Tri-Party Agreement / EA Milestones

Number	Milestone Title	Status
M-083-07 (TRP-01-515)	**"Complete Repackaging & Shipping of Rocky Flats Ash to the CWC"**	**Due April 30, 2001 –** Currently behind schedule but April milestone completion date will be met.
M-083-08 (TRP-01-516	**"Complete Requirements to Ship Rocky Flats Ash to WIPP"**	**Due June 1, 2001 -** On schedule.

DNFSB Commitments

M-IP-114 (TRP-01-501) R94-01)	**"Ship Alloys to SRS or Complete Stabilization of Alloys"**	**Due June 30, 2001 -** On schedule.
M-IP-110 (TRP-02-500)	**"Complete Packaging of Metal Inventory"**	**Due March 31, 2001 –** Metal and corrosion products items are scheduled to be brushed and packaged in inner Bagless Transfer System containers by March 31, 2001 and April 30, 2001 respectively. All material will be packaged in outer 3013 containers by August 1, 2001. **Yellow**

MILESTONE EXCEPTION REPORT

Number/WBS	Level	Milestone Title	Baseline Date	Forecast Date

OVERDUE – 0

FORECAST LATE – 1

TRP-02-500 1.4.5 **HQ** Complete Packaging of Metal Inventory 03/31/2001 08/01/2001

Cause: The Outer Can Welder, required for completion of this milestone, will not be operational in time to meet this milestone commitment.

Impact: This DNFSB Recommendation 2000-1 milestone will be delayed until August 31, 2001.

Corrective Action: Nothing to report at this time.

FY 2002 Tri-Party Agreement / EA Milestones

Number	Milestone Title	Status
	Nothing to report at this time.	

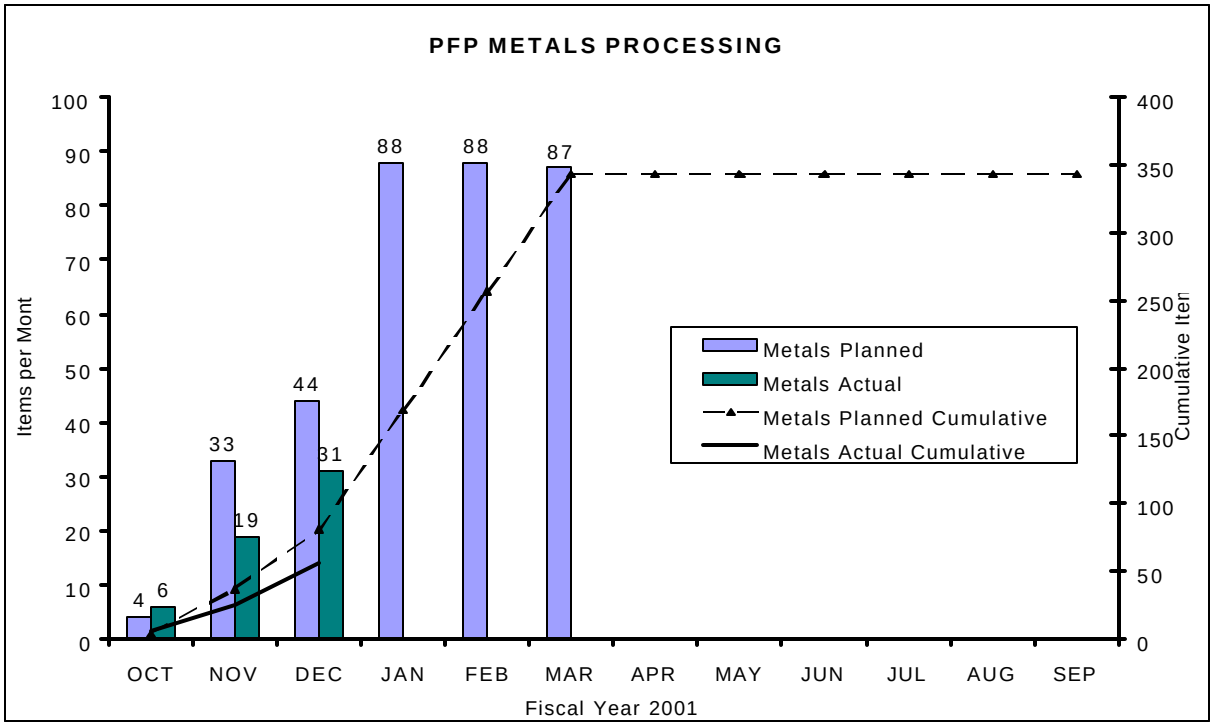
DNFSB Commitments

R94-01 (TRP-01-500)	**"Complete Stabilization & Packaging Plutonium Solutions"**	**Due December 31, 2001 –** Currently forecast to be 3 months behind schedule.

PERFORMANCE OBJECTIVES

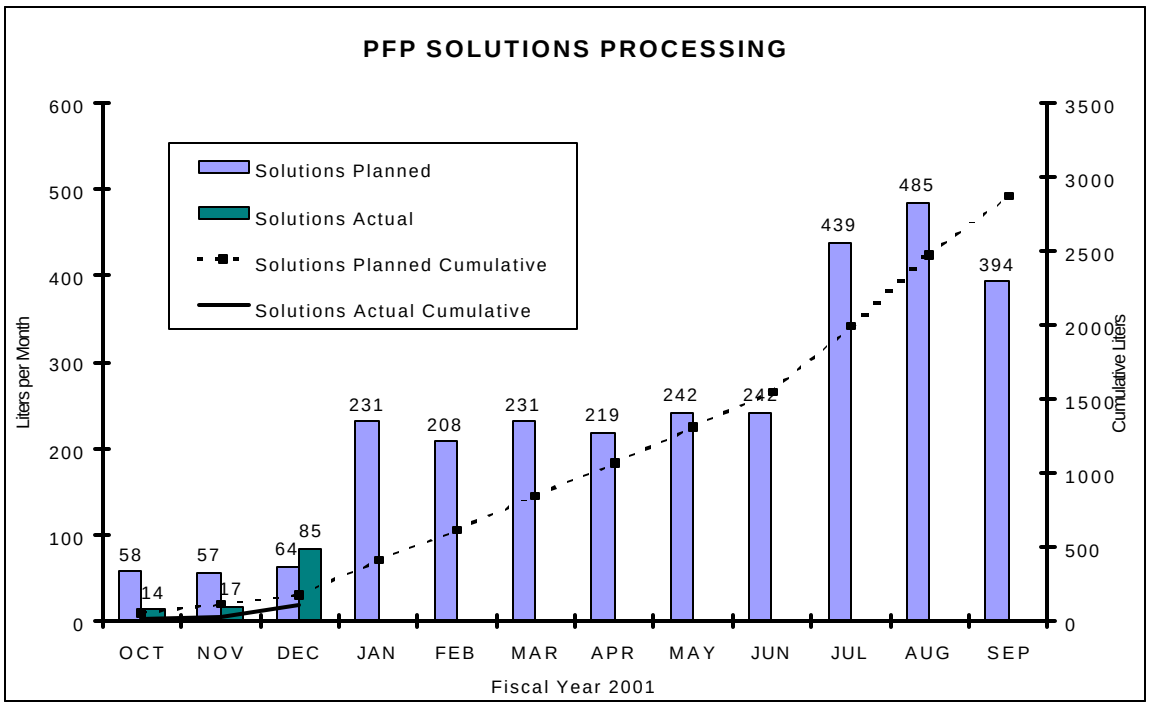
Oxides/Metals/Polycubes Stabilization

Green



Solution Stabilization

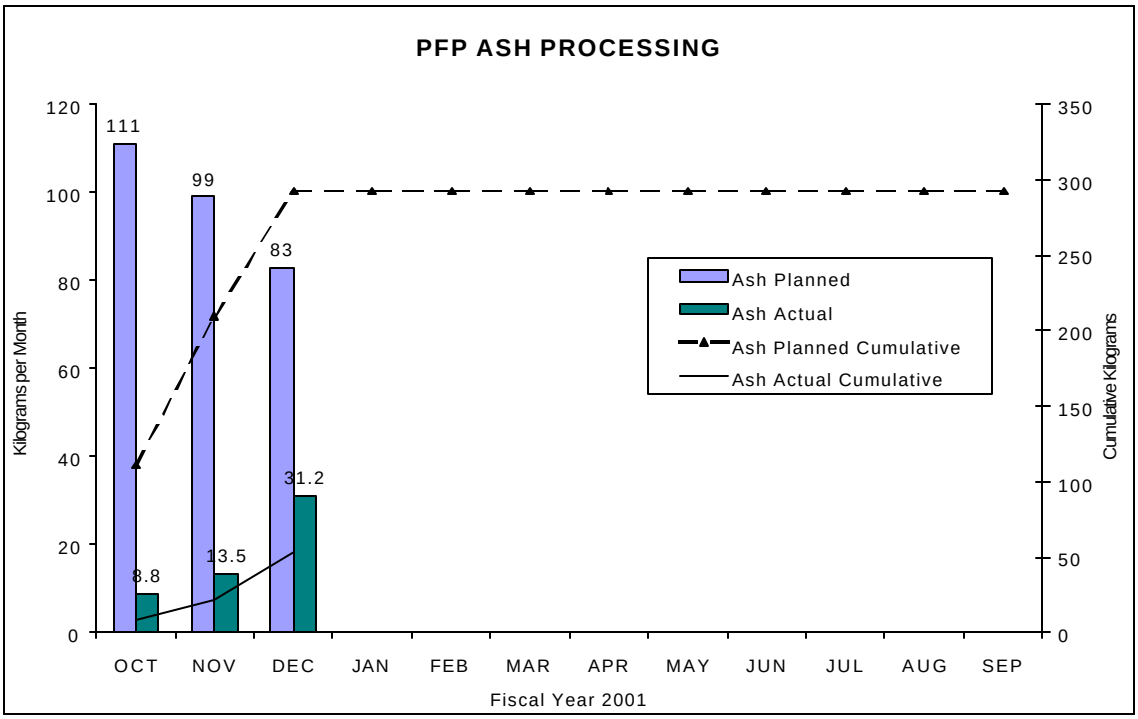
Yellow



The quantity of the boats from the precipitation process is significantly higher than forecasted in the baseline estimates and schedules.

Residues Stabilization

Yellow



Significantly behind schedule for anticipated target date, however the April Tri-Party Agreement Milestone (M-083-07) will be met.

KEY INTEGRATION ACTIVITIES

- Techniques for improving the precipitate processing are being worked jointly by staff members of the Plutonium Process Support Laboratories and Pacific Northwest National Laboratory (PNNL).
- A meeting has been held with PNNL to select the characterization and material pretreatment methods to remove chlorides prior to processing.

- Coordinating with Lawrence Livermore National Laboratory (LLNL) to ship oxide material (81 kg.) to that facility next spring at no cost to the NMS Project.

- Westinghouse Savannah River Company shipment of the 2736-ZB Bagless Transfer System (BTS) and Outer Can Welder (OCW) are scheduled for the weeks of February 1, 2001, and March 1, 2001, respectively.